WHAT IS CLAIMED IS:

1. A method for manufacturing a pre-cast polyacrylamide slab gel for use in slab electrophoresis, said method comprising:

(a) placing a gel-forming liquid mixture inside a gel enclosure defined by a pair of chemically inert, transparent plates separated from each other by fixed distance, said gel-forming mixture comprising an acrylamide monomer, a crosslinking agent, a buffer, and a nonionic amphiphilic polymer, in aqueous solution; and

(b) polymerizing said gel-forming mixture into a gel.

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2. A method in accordance with claim **1** in which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to about 8,000,000.

3. A method in accordance with claim **1** in which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to about 5,000,000.

4. A method in accordance with claim **1** in which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to about 1,000,000.

5. A method in accordance with claim **1** in which said nonionic amphiphilic polymer has a molecular weight of about 100,000 or less.

6. A method in accordance with claim **1** in which said nonionic amphiphilic polymer has a molecular weight of about 20,000 or less.

7. A method in accordance with claim **1** in which said nonionic amphiphilic polymer is a member selected from the group consisting of poly(vinyl alcohol), agarose, poly(vinyl pyrrolidone), poly(ethylene glycol), poly(ethylene oxide), poly(propylene glycol), poly(propylene glycol)/ poly(ethylene glycol) copolymers, and linear polyacrylamide.

8. A method in accordance with claim **1** in which said nonionic amphiphilic polymer is poly(vinyl alcohol).

9. A method in accordance with claim **8** in which said poly(vinyl alcohol) has a molecular weight of from about 200 to about 20,000.

10. A method in accordance with claim **8** in which said poly(vinyl alcohol) comprises from about 0.5% to about 5% by weight of said aqueous solution.

11. A method in accordance with claim **1** in which said nonionic amphiphilic polymer is poly(ethylene glycol) or poly(ethylene oxide).

12. A method in accordance with claim **11** in which said poly(ethylene glycol) or poly(ethylene oxide) has a molecular weight of from about 100,000 to about 1,000,000.

13. A method in accordance with claim **11** in which said poly(ethylene glycol) or poly(ethylene oxide) comprises from about 0.01% to about 0.3% by weight of said aqueous solution.

14. A method in accordance with claim **1** in which said plates are glass.

15. A method in accordance with claim **1** in which said plates are plastic.

16. A method in accordance with claim **15** in which said plastic is a member selected from the group consisting of polycarbonate, polystyrene, acrylic polymers, styrene-acrylonitrile copolymer, acrylonitrile polymers, poly(ethylene terephthalate), poly(ethylene terephthalate glycolate), and poly(ethylene naphthalenedicarboxylate).

17. A method in accordance with claim **15** in which said plastic is a polystyrene-acrylonitrile blend.

18. A pre-cast polyacrylamide slab gel for use in slab gel electrophoresis, said pre-cast slab gel comprising:

a pair of chemically inert, transparent plates, and

a polyacrylamide gel cast between said plates, said polyacrylamide gel formed by polymerization of an acrylamide monomer and a crosslinking agent, said polymerization having been performed in an aqueous solution comprising said acrylamide monomer, said crosslinking agent, a buffer, and a nonionic amphiphilic polymer.

19. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to about 8,000,000.

20. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to about 5,000,000.

21. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said nonionic amphiphilic polymer has a molecular weight of from about 100,000 to about 1,000,000.

22. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said nonionic amphiphilic polymer has a molecular weight of about 20,000 or less.

23. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said nonionic amphiphilic polymer is a member selected from the group consisting of poly(vinyl alcohol), agarose, poly(vinyl pyrrolidone), poly(ethylene glycol), poly(ethylene oxide), poly(propylene glycol), poly(propylene glycol)/ poly(ethylene glycol) copolymers, and linear polyacrylamide.

24. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said nonionic amphiphilic polymer is poly(vinyl alcohol).

25. A pre-cast polyacrylamide slab gel in accordance with claim **24** in which poly(vinyl alcohol) has a molecular weight of from about 200 to about 20,000.

26. A pre-cast polyacrylamide slab gel in accordance with claim **24** in which said poly(vinyl alcohol) comprises from about 0.5% to about 5% by weight of said aqueous solution.

27. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said nonionic amphiphilic polymer is poly(ethylene glycol) or poly(ethylene oxide).

28. A pre-cast polyacrylamide slab gel in accordance with claim **27** in which said poly(ethylene glycol) or poly(ethylene oxide) has a molecular weight of from about 100,000 to about 1,000,000.

29. A pre-cast polyacrylamide slab gel in accordance with claim **27** in which said poly(ethylene glycol) or poly(ethylene oxide) comprises from about 0.01% to about 0.3% by weight of said aqueous solution.

30. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said plates are glass.

31. A pre-cast polyacrylamide slab gel in accordance with claim **18** in which said plates are plastic.

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32. A pre-cast polyacrylamide slab gel in accordance with claim **31** in which said plastic is a member selected from the group consisting of polycarbonate, polystyrene, acrylic polymers, styrene-acrylonitrile copolymer, acrylonitrile polymers, poly(ethylene terephthalate), poly(ethylene terephthalate glycolate), and poly(ethylene naphthalenedicarboxylate).

33. A pre-cast polyacrylamide slab gel in accordance with claim **31** in which said plastic is a polystyrene-acrylonitrile blend.